

June 16, 1936.

C. H. WHEELER

2,044,037

COIN COLLECTOR APPARATUS

Filed May 11, 1935

FIG. 1

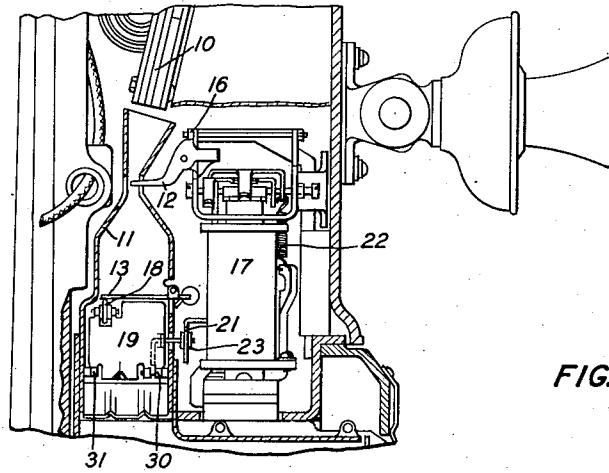


FIG. 6

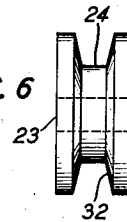


FIG. 2

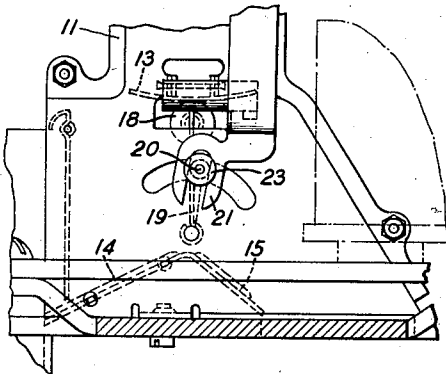


FIG. 3

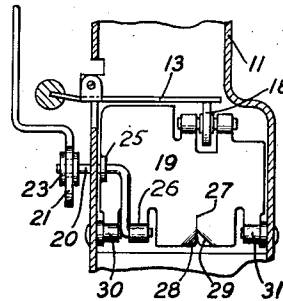


FIG. 5

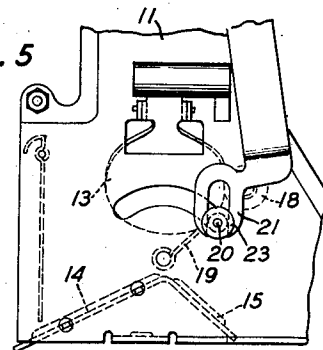
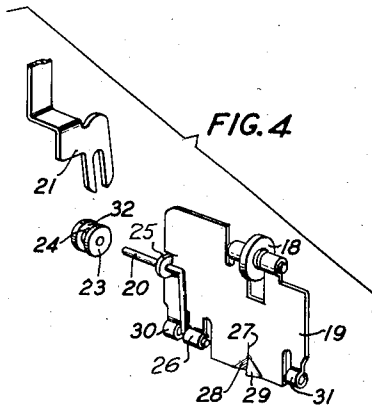


FIG. 4



INVENTOR
C. H. WHEELER

BY

B. H. Jackson

ATTORNEY

UNITED STATES PATENT OFFICE

2,044,037

COIN COLLECTOR APPARATUS

Clyde H. Wheeler, Midland Park, N. J., assignor
to Bell Telephone Laboratories, Incorporated,
New York, N. Y., a corporation of New York

Application May 11, 1935, Serial No. 21,016

2 Claims. (Cl. 232—57.5)

This invention relates to coin collector apparatus particularly such apparatus for use at a telephone pay station.

As applied to telephone coin collectors the present invention is particularly adapted for that type of coin collector wherein the calling party tentatively deposits a coin, which coin is subsequently refunded or collected depending upon whether the desired connection is obtained. In such apparatus as disclosed, for example, in O. F. Forsberg U. S. Patent 1,043,219 of November 5, 1912, it is usual to temporarily retain the deposited coin upon a trap-door normally held in a coin supporting position by a pivoted vane adapted to be actuated by a polarized electromagnet to release the trap-door to discharge the coin into a refund chute or collect chute depending upon the direction the vane is moved. The electromagnet may have an operating lever with a fork which engages at one end a pin on the vane to produce clockwise or counter-clockwise movement of the vane when current is applied to energize the electromagnet. Spring means operating on the opposite end of this lever provides a restoring force for bringing the operating lever and the vane to their normal positions when the electromagnet is deenergized.

However, with such an arrangement as shown in the above-mentioned Forsberg patent the operating fork engages the vane pin in a relationship which very closely approaches a dead center when the vane is in its fully operated collect or refund position. Hence any roughening of the parts while in service or the accumulation of foreign material is liable to result in a locked condition which will require the servicing of the collector before further additional calls can be made.

An object of this invention is to improve the operating characteristics of the coin relay in restoring the pivoted vane to its normal position after the vane has been actuated to its collect or refund position.

In accordance with the preferred form of this invention frictional conditions between the relay operating lever and the coin vane are considerably improved by mounting on the coin vane pin a roller with an external annular groove which engages the operating fork of the electromagnet. The coin vane pin should provide a fulcrum of small diameter of hard material such as phosphor bronze wire. This affords considerably less frictional resistance to the pull exerted by the restoring spring than would be present with a sliding contact between a rigid coin vane pin and

the sides of the operating lever fork. This improved arrangement has the additional advantage that it provides numerous changes in the points of contact engagement of the fork with the roller as the roller rotates with the operation of the relay.

Referring to the drawing,

Fig. 1 is a fragmentary view partly in section of the central portion of a telephone coin collector;

Fig. 2 is an enlarged front view of the coin hopper of Fig. 1 and associated apparatus;

Fig. 3 is a side view of the apparatus of Fig. 2;

Fig. 4 discloses the coin vane construction of this invention;

Fig. 5 is similar to Fig. 2 except that the coin vane is shown in its refunding position; and

Fig. 6 is an enlarged view of the roller on the coin vane pin.

Fig. 1 discloses only the central portion of a telephone coin collector of the general type disclosed in the above-mentioned Forsberg patent and reference may be made to the cited patent for a fuller description of its mode of operation than is needed herein for a description of the present invention. A subscriber wishing to make a telephone call deposits a coin in a slot provided therefor and the coin after passing down a coin chute 10 enters a coin hopper 11, actuates a coin trigger 12 and temporarily comes to rest upon a pivoted coin trap 13 from which, under the control of a central office operator, it may be discharged to a refund chute 14 or a collect chute 15 depending upon whether the desired connection has been established. Coin trigger 12 when actuated by a falling coin serves to release a spring pressed lever 16 for closing spring contacts to establish a circuit through the windings of the polarized relay 17 in the usual and well-known manner.

Coin trap 13 is normally supported in a substantially horizontal position by a roller 18 mounted on a vertical vane 19 pivoted at its lower end. Vane 19 has a pin 20 projecting through an arcuate slot in the front wall of the coin hopper 11 to enable the vane to be actuated by the forked end of the armature extension 21 of electromagnet 17. If the central office operator energizes electromagnet 17 with current of one polarity, vane 19 as viewed in Fig. 2 will be moved to the right and the coin trap 13 in falling will discharge coins thereon into refund chute 14 to enable the coins to be recovered by the user of the instrument; but if the electromagnet is energized with current of opposite polarity vane 19 will be moved

to the left and the coin trap 13 in falling will discharge its coins into a collect chute 15 leading to a suitable cash compartment. In either case the armature extension 21 after the electromagnet 5 17 is deenergized is restored to its normal position with coin vane 19 in its coin trap supporting position by one of a pair of springs 22 (only one shown) coupled to extensions of the relay armature on opposite sides of the pivoting axis of the 10 armature.

Fig. 5 shows the armature extension 21 in its fully operated position for refunding and it will be noted that for the restoring operation fork 21 and the vane pin 20 are in a relationship which 15 very closely approaches a dead center. Hence with prior constructions where the fork 21 engages the pin 20 directly, any roughening of the parts while in service or the accumulation of foreign material is liable to produce such a load 20 on the fork restoring spring 22 that a locked condition may result which may put the coin collector out of service until repairs have been made.

In accordance with this invention frictional conditions between the fork 21 and pin 20 are 25 substantially minimized by mounting a roller 23 on pin 20, the roller having an external annular groove 24 which engages fork 21. Since the roller 23 is freely rotatable on pin 20 the pull exerted on fork 21 by restoring spring 22 will 30 readily cause the rotation of roller 23 up between the prongs of the fork until the neutral position of Fig. 2 has been reached. This affords considerably less frictional resistance to the pull exerted by restoring spring 22 than would be 35 present with a sliding contact between a rigid coin vane pin and the sides of the operating lever fork. This improved arrangement has the additional advantage that it provides numerous changes in the points of contact of the fork with 40 the roller as the roller rotates with the operation of the relay. If desired, roller 23 may be retained in position on wire 20 solely by the prongs of the fork 21 lying within the groove 24. The groove in roller 23 should preferably have tapered side 45 walls 32 as shown in the enlarged view of Fig. 6. This taper reduces friction in the operating arm slot and permits less precise alignment of vane stem 20 and operating arm 21.

The coin vane pin 20 should provide a fulcrum 50 of small diameter and is made preferably of hard metal such as phosphor bronze wire. Heretofore

the operating pin for the vane has been formed of a rounded shape from the initial blank of sheet brass, for example. In order to secure the wire 20 in place one end of the wire is anchored within a hub 26 formed at the lower edge of the vane 5 19 and the wire also passes through an apertured lug 25 formed at one side edge of the vane. This arrangement rigidly secures the pin 20 in place without the necessity of welding the pin to the vane. It should also be noted that the 10 bottom portion of the vane 19 is slotted along the line 27 and the rounded corners 28, 29 at the lower edge adjacent the slot are bent up in opposite directions with respect to the plane of the vane to prevent a coin from lying flat on the side of 15 the tipped vane where it might not clear out properly on account of its wedging against the vane bearing hubs 30, 31 or the pin anchorage hub 26.

While the preferred form of the invention has 20 been disclosed in the above described drawing it is to be understood that alternative forms are contemplated commensurate in scope with the appended claims.

What is claimed is:

25 1. A coin collector comprising a coin passage, an arcuate slot in a side wall of said passage, a vane within said passage pivoted near its lower end, one side edge of said vane remote from its pivoting axis having an apertured lug laterally 30 projecting from a face of said vane, an L-shaped pin having one arm projecting through said lug and projecting externally of said passage through said slot and having a second arm fastened to said vane in substantial alignment with its pivot- 35 ing axis, a roller on said pin external of said passage and operating means for said vane having a yoke embracing said roller.

2. A coin collector comprising a coin passage, an arcuate slot in a side wall of said passage, 40 a vane within said passage pivoted near its lower end, one side edge of said vane remote from its pivoting axis having an apertured lug laterally projecting from a face of said vane, a pin having 45 one arm projecting through said lug and projecting externally of said passage through said slot, said pin having a second arm fastened to said vane in substantial alignment with the pivoting axis of said vane, and means operating on said 50 pin for deflecting said vane.

CLYDE H. WHEELER.